STARS ACADEMY LAHORE

Head Office: 590-Q, Main Boulevard, Johar Town Lahore. 0321-9432186, 042-35311110

Total MCQs: 220 **Max.Marks: 1100**

ENTRANCE TEST-2017

For F.Sc. and Non-F.Sc. Students

Time Allowed: 150 Minutes **MDCAT GRAND TEST 1**

Instructions:

I. Read the instructions on the MCQ Response Form Carefully.
II. Choose the Single Best Answer for each question.
III. Candidates are strictly prohibited to give any identification mark except Roll No. Signature in the specified columns only.

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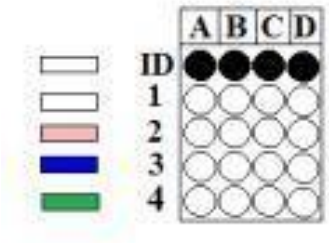
COMPULSORY QUESTION FOR IDENTIFICATION

Q-ID. What is the colour of your Question Paper?

A) Blue C) Pink
B) Green **D) White**

Ans: Colour of your Question Paper is White.
Fill the Circle corresponding to letter 'A' Against 'ID' in your MCQ response form (Exactly as shown in the diagram).



BIOLOGY

Q.1 **When chromosomes uncoil, the nucleoli are reformed and two nuclei are the two polesof the cell; stage is known as**
A) Prophase **C) Telophase**
B) Metaphase D) Anaphase

Q.2 **Mental retardation, short stature, broad face and squint eyes are the symptoms of**
A) Down's syndrome C) Turner's syndrome
B) Klinefelter's syndrome D) XYZ syndrome

Q.3 **Chiasmata formation takes place during the process which is known as**
A) Crossing Over C) Pairing
B) Attachment D) Leptotene

Q.4 **Healing of a wound and repair is the phenomenon which takes place by the process of**
A) Mitosis C) Cell Growth
B) Meiosis D) Mitosis & Meiosis

Q.5 **Which one of the following is the main cause of cancer?**
A) Mutation C) Regulated Mitosis
B) Controlled Cell Division D) Haploid Division

Q.6 **Plastids are only found in the**
A) Animals and Plants **C) Plants**
B) Animals D) Viruses

Q.7 **Plasma membrane is chemically composed of**
A) Phospholipids only C) Lipids and carbohydrates
B) Lipids and proteins D) Glycoproteins

Q.8 **Endoplasmic reticulum contains a system of flattened membrane-bounded sacs which are named as**
A) Cristae **C) Cisternae**
B) Marks D) Tubules

Q.9 Lipids synthesis / metabolism takes place in which of the following organelle?
A) Mitochondria
B) Vacuoles
C) Rough endoplasmic reticulum
D) Smooth endoplasmic reticulum

Q.10 Ribosomes exist in two forms, either attached with RER or freely dispersed in the
A) Tonoplast
B) Golgi bodies
C) Cytoplasm
D) SER

Q.11 The covalent bond formed between two monosaccharides is called
A) Glycosidic Bond
B) Hydrogen Bond
C) Peptide Bond
D) Disulphide

Q.12 The bond formed between glucose and fructose form sucrose is
A) 1,4 Glycosidic Linkage
B) 1,2 Glycosidic Linkage
C) 1,6 Glycosidic Linkage
D) 1,3 Glycosidic Linkage

Q.13 In an amino acid in which the R-group is H, its name will be
A) Alanine
B) Glycine
C) Leucine
D) Valine

Q.14 Fatty acid are the organic compounds containing hydrogen, oxygen and one of the following are
A) –COOH
B) –NH2
C) Acyl
D) Sucrose

Q.15 The combination of a pentose sugar with a base result in a compound is known as
A) Nucleotide
B) Nucleoside
C) Nucleic Acid
D) Polynucleotide

Q.16 Carbohydrates are organic molecules and contain three elements
A) Carbon, water and oxygen
B) Carbon, Sulphur and hydrogen
C) Carbon, calcium and hydrogen
D) Carbon, hydrogen and oxygen

Q.17 Which one are intermediates in respiration and photosynthesis both?
A) Ribose and heptolose
B) Glyceraldehydes and dihydroxyacetone
C) Glucose and galactose
D) Fructose and ribulose

Q.18 Which of the following is a peptide bond?
A) –C–N
B) –C–O
C) –C–P
D) –C–S

Q.19 Which of the following is an unsaturated fatty acid?
A) Acetic Acid
B) Butyric acid
C) Oleic acid
D) Palmitic acid

Q.20 Which of the following combination of base pair is absent in DNA?
A) A–T
B) C–G
C) A–U
D) T–A

Q.21 The type of inhibition in which inhibitor has no structural similarity to substrate and combines with enzyme at other than the active site is called
A) Irreversible inhibition
B) Competitive inhibition
C) Non-competitive and reversible inhibition
D) Reversible inhibition

Q.22 The inhibitors that bind tightly and permanently to enzymes and destroy their globular structure and catalytic activity are
A) Reversible inhibitors
B) Irreversible inhibitors
C) Competitive inhibitors
D) Non-competitive inhibitors

Q.23 Which one of the following diseases caused by enveloped RNA virus and spread in epidemic form?
A) Influenza
B) Herpes Simplex
C) Polio
D) Small Pox

Q.24 The structure which contains the gene for drug resistance bacteria are
A) Nucleoids
B) Mesosomes
C) Chromatin Bodies
D) Plasmids

Q.25 Antibiotics that kill microbes immediately are called
A) Microbistatic
B) Microbicidal
C) Biostatic
D) Chemotherapeutic

Q.26 **Mesosomes are infoldings of the cell membrane and are involved in**
A) DNA replication
C) Protein synthesis
B) RNA synthesis
D) Metabolism

Q.27 **Most widespread problem of the antibiotics misuse is the**
A) Rapid cure
C) Disturbance of metabolism
B) Increased resistance in pathogen
D) Immunity

Q.28 **Body cavity of round worms is called**
A) Pseudocoelom
C) Acoelom
B) Coelom
D) Enteron

Q.29 **Fasciola is endoparasite of**
A) Colon
C) Small Intestine
B) Liver
D) Bile Duct

Q.30 **The nervous system develops from which of the following layer during embryonic development of animals**
A) Mesoderm
C) Endoderm
B) Ectoderm
D) Mesoderm and Endoderm

Q.31 **During development, in an animal, mesoderm layer gives rise to**
A) Nervous System
C) Muscular and skeletal system
B) Alimentary canal lining
D) Mouth

Q.32 **Which of the following hormones stimulate the secretion of pancreatic juice from pancreas in liver?**
A) Secretin
C) Gastrin
B) Pepsinogen
D) Both Gastrin and Secretin

Q.33 **In large intestine, vitamin K is formed by the activity of**
A) Symbiotic Bacteria
C) Parasitic Bacteria
B) Obligate Bacteria
D) Facultative Bacteria

Q.34 **The muscles of the stomach walls thoroughly mix up the food with gastric juices and the resulting semi-solid / semi-liquid material is called**
A) Bolus
C) Mucus
B) Bolus or chime
D) Chyme

Q.35 **Trypsinogen is converted into trypsin by the activity of**
A) Goblet cells
C) Enterokinase
B) Absorptive cells
D) Peptidase

Q.36 **Which protein plays a major role in maintaining osmotic balance?**
A) Albumin
C) Fibrinogen
B) Globulin
D) Prothrombin

Q.37 **The type of agranulocytes which stays in blood for a few hours and then enters tissues and become macrophages are**
A) Lymphocytes
C) Eosinophils
B) Monocyte
D) Basophils

Q.38 **In a normal person plasma constitutes about _____ by volume of blood**
A) 50%
C) 45%
B) 60%
D) 55%

Q.39 **Which vein has oxygenated blood?**
A) Renal vein
C) Pulmonary vein
B) Subclavian vein
D) Jugular vein

Q.40 **Reabsorption of water by counter current multiplier mechanism takes place at**
A) Proximal Tubule
C) Collecting Duct
B) Distal Tubule
D) Loop of Henle

Q.41 **Antiduretic hormone helps in reabsorption of water by changing permeability of**
A) Proximal Tubule
C) Collecting Duct
B) Distal Tubule
D) Loop of Henle

Q.42 **During peritoneal dialysis, dialysis fluid is introduced into which part of human body?**
A) Liver
C) Kidney
B) Abdomen
D) Pancreas

Q.43 Aldosterone helps in conservation or active absorption of
A) Sodium
C) Potassium
B) Calcium
D) Bicarbonate Ions

Q.44 Blood enters the glomerulus through
A) Efferent arteriole
C) Renal artery
B) Afferent arteriole
D) Renal vein

Q.45 Over-activity of sympathetic nervous system causes
A) Disturbance of Vision
C) Decrease in Blood Pressure
B) Constipation
D) Increase in Heart Rate

Q.46 Which structures respond when they are stimulated by impulse coming through motor neuron?
A) Receptors
C) Effectors
B) Responses
D) Transduction

Q.47 Respiratory center is located in
A) Cerebrum
C) Medulla
B) Cerebellum
D) Hypothalamus

Q.48 The number of cranial nerves in human is
A) 31 pairs
C) 24 pairs
B) 12 pairs
D) 62 pairs

Q.49 The part of brain which controls breathing, heart rate and swallowing is
A) Cerebrum
C) Medulla
B) Cerebellum
D) Hypothalamus

Q.50 A type of cell in human testes which produces testosterone is called
A) Interstitial Cells
C) Sertoli Cells
B) Germ Cells
D) Spermatocytes

Q.51 Breakdown of endometrium during menstruation is due to
A) Increase in Level of LH
C) Increase in Level of Progesterone
B) Decrease in Level of Progesterone
D) Increase in Level of Oestrogen

Q.52 Oogenisis occure in ?
A) Both Uterus and Cervix
C) Uterus
B) Cervix
D) Ovary

Q.53 Luteinizing hormone triggers
A) Cessation of Oogenesis
C) Ovulation
B) Breakdown of Oocyte
D) Follicle stimulation

Q.54 Syphilis is a sexually transmitted disease which is caused by
A) Neisseria gonorrhoeae
C) Treponema pallidum
B) E. coli
D) Mycobacterium avium

Q.55 Muscle is made up of many cells which are referred to as
A) Myofilaments
C) Sarcolemma
B) Myofibrils
D) Muscles Fiber

Q.56 The length of myofibril from one Z-band to the next is known as
A) Sa rcomere
C) Sarcoplasm
B) Sarcolemma
D) Muscle Fiber

Q.57 Calcium ions released during a muscle fiber contraction attach with
A) Myosin
C) Tropomyosin
B) Actin
D) Troponin

Q.58 A muscle condition resulting from the accumulation of lactic acid and ionic imbalance is:
A) Tetany
C) Cramp
B) Muscle Fatigue
D) Tetanus

Q.59 The pigment which stores oxygen in muscles is
A) Hemoglobin
C) Myosin
B) Myoglobin
D) Actinomyosin

Q.60 Neurosecretory cells are present in which part of brain
A) Hypothalamus
C) Pons
B) Midbrain
D) Cerebellum

Q.61 Which of the following is the function of glucagon hormone?
A) Glycogen to Glucose
C) Glucose to Lipids
B) Glucose to Glycogen
D) Glucose to Proteins

Q.62 Addison's disease is caused due to destruction of
A) Adrenal Cortex
C) Adrenal Medulla
B) Pituitary Adrenal Axis
D) Hypothalamus

Q.63 Gastrin is the hormone which is produced by the
A) Liver
C) Pyloric region of stomach
B) Adrenal gland
D) Mucosal lining of intestine

Q.64 β-cells of liver secrete a hormone that is called
A) Insulin
C) Antidiuretic hormone
B) Glucagon
D) Gastrin

Q.65 Vasopressin and Oxytocin are released from the
A) Placenta
C) Anterior pituitary
B) Ovary
D) Posterior pituitary

Q.66 Antigen is a foreign protein or any other molecule which stimulates the formation of
A) saliva
C) Mucus
B) Immunogen
D) Antibodies

Q.67 Antibodies are produced by which of the following lymphocytes?
A) B lymphocytes
C) T lymphocytes
B) A lymphocytes
D) B and T lymphocytes

Q.68 T-lymphocytes become mature and competent under the influence of
A) Liver
C) Thymus gland
B) Bursa of fabricius
D) Spleen

Q.69 Skin and mucous membranes are part of the body defense system and they form the
A) Physical barrier
C) Chemical barriers
B) Electrochemical
D) Biological barriers

Q.70 Snake bite is treated with which type of immunization?
A) Active
C) Humoral
B) Passive
D) Specific

Q.71 ATP is a ?
A) carbonydrate
C) Nucleotide
B) Protein
D) Fat

Q.72 Glycolysis is the breakdown of glucose into two molecules of
A) Glycerate
C) Pyruvate
B) Lactic Acid
D) Succinic Acid

Q.73 Before entering Krebs's cycle, the pyruvate is first decarboxylated and oxidized into
A) Alpha Ketoglutaric Acid
C) Glyceric Acid
B) Citric Acid
D) Acetic Acid

Q.74 Some electron from the second primary acceptor may pass back to chlorophyll molecules by electron carrier system, yielding ATP. This process is called
A) Phosphorylation
C) Non-Cyclic Phosphorylation
B) Photophosphorylation
D) Cyclic Phosphorylation

Q.75 Liposomes are used in gene therapy against
A) Hypercholesterolemia
B) Coronary Artery Angioplasty
C) Cystic Fibrosis
D) Severe Combined Immunodeficiency Syndrome (SCID)

Q.76 Genetically engineered cells are introduced into bone marrow cells in the treatment of
A) Hypercholesterolemia
B) Severe Combined Immunodeficiency Syndrome
C) Cystic Fibrosis
D) Coronary Artery Angioplasty (SCID)

Q.77 The common vectors used in recombinant DNA technology are
A) Probes
C) Plasmids
B) Palindromes
D) Prions

Q.78 The enzyme used to isolate gene from DNA is

A) Helicase
C) Restriction Enzyme
B) Reverse Transcriptase
D) DNA Polymerase

Q.79 In recombinant DNA technology _____ are tools for manipulating DNA

A) Viruses
C) Enzymes
B) Chromosomes
D) Genes

Q.80 Which one of the following is depleting and causing thinning of ozone?

A) Chlorine
C) Chlorofluorocarbon
B) Bromine
D) Carbon

Q.81 The typical environment of a particular organism population community is called

A) Niche
C) Habitat
B) Ecosystem
D) Biosphere

Q.82 Excessive enrichment of water with nutrients by human activity by which large amount of living organic matter grows is called

A) Archeotrophication
C) Enrichment
B) Eutrophication
D) Low Trophication

Q.83 In an ecosystem, mycorrhizae is an example of

A) Symbiosis
C) Commensalism
B) Predation
D) Parasitism

Q.84 The sex of individuals of next generation always depends on one of the parents who is

A) Heterogametic
C) Isogametic
B) Homogametic
D) Isomorphic

Q.85 Which of the following will be hemophilic?

A) X^HX^h
C) X^hY
B) X^HX^H
D) X^HY

Q.86 Which of the following is an example of X-linked recessive trait in humans?

A) Hypophospatemic Rickets
C) Baldness
B) Colour Blindness
D) Beard Growth

Q.87 Which trait in human in an example of multiple alleles?

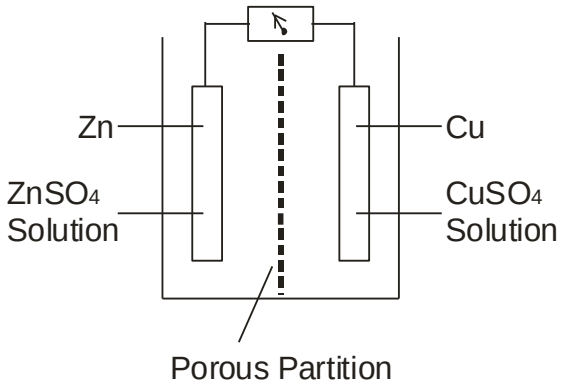
A) Eye Colour
C) ABO-Blood Group
B) Skin Colour
D) Rh-Blood Group

Q.88 When a gene pair at one locus interacts with another gene at another locus, the interaction is called

A) Dominance
C) Pleiotropy
B) Multiple Alleles
D) Epistasis

Chemistry

Q.89 The expected emf of the given galvanic cell in diagram is



A) 1.1 V
C) 2.0 V
B) 1.5 V
D) 1.4 V

Q.90 Which of the following reaction has –ve potential?

A) $Cu \rightarrow Cu^{+2} + 2e^-$
C) $2Na + Cl_2 \rightarrow 2NaCl$
B) $2Cl^- \rightarrow Cl_2 + 2e^-$
D) $Na^+ + 1e^- \rightarrow Na$

Q.91 Which of the following substances decreases pH of a buffer when added to it

A) Neutral
C) Base
B) Strong acid
D) water

Q.92 The 'pH' of 0.1M CH_3COOH on 10% dissociation is

A) 1
C) 3
B) 2
D) 4

Q.93 2nd half life of a 2nd order reaction is

A) same as 1st half life
C) half of 1st half life
B) twice the 1st half life
D) 4 times of 1st half life

Q.94 Following is the mechanism of reaction

(i) $N_2O_5 \xrightarrow{Slow} NO_2 + NO_3$

(ii) $NO_2 + NO_3 \xrightarrow{Fast} NO + NO_2 + O_2$

(iii) $NO + NO_3 \xrightarrow{Fast} 2NO_2$

If the concentration of NO_3 is doubled the rate of reaction becomes

A) 4 times
C) remains same
B) 2 times
D) half

Q.95 Melting point of Carbon is highest among 3rd period elements because

A) it uses all 3 of its valence electrons
C) it uses all 5 of its valence electrons
B) it uses all 4 of its valence electrons
D) it uses all 6 of its valence electrons

Q.96 Ionic radius of non metals of 3rd period

A) Increases from left to right
B) Increases with increases in number of electrons in valence shells
C) Increases with increase in number of protons
D) Decrease from left to right in a period as nuclear charge increases

Q.97 Alkaline earth metal oxides react with water to give hydroxides. The solubility of an alkaline earth metal oxides in water increases as we move from top to bottom in a group. What type of reaction occours when these oxides are dissolved in water?

A) acid-base
C) salt formation
B) oxidation-reduction
D) reduction

Q.98 Which of the following Noble gas is used in tungsten filament lamps

A) Ne
C) Ar
B) Kr
D) Rn

Q.99 Which of the following pair has oxidation state of Fe +3 and +2 respectively?

A) $FeSO_4$ and $FeCl_3$
C) $FeCl_2$ and $FeCl_3$
B) $FeSO_4$ and $FeCl_2$
D) $Fe_2(SO_4)_3$ and $FeSO_4$

Q.100 IUPAC name of $Fe[Fe(CN)_4]$

A) Ferroferricyanide ,
C) Iron tetracyanoferrate(III)
B) Iron tetracyanoferrate(II)
D) Iron tetracyanoferrate(IV)

Q.101 The reaction Ammonia with HNO_3 produces NH_4NO_3 is

A) $NH_3 + HNO_3 \longrightarrow NH_4NO_3 + H_2O$
C) $NH_3 + HNO_3 \longrightarrow 3NH_4NO_3 + H_2O$
B) $NH_3 + 2HNO_3 \longrightarrow NH_4NO_3 + H_2O$
D) $2NH_3 + HNO_3 \longrightarrow NH_4NO_3 + H_2O$

Q.102 If rain water includes H_2SO_4 is called

A) acid rain
C) normal rain
B) temporary acid rain
D) ionic rain

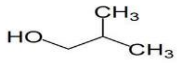
Q.103 Correct reaction for formation of oleum is

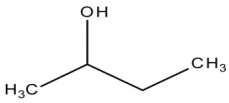
A) $SO_3 + H_2SO_3 \longrightarrow H_2S_2O_7$
C) $SO_2 + H_2SO_4 \longrightarrow H_2S_2O_7$
B) $SO_3 + H_2SO_4 \longrightarrow H_2S_2O_7$
D) $SO_3 + H_2S_2O_3 \longrightarrow H_2S_2O_7$

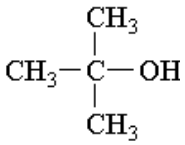
Q.104 SO_2 gas enters in _____ tower after drying tower is

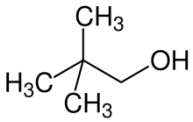
A) Arsenic purifier
C) testing box
B) contact tower
D) cooling pipes

Q.105 Position isomer of 1-Butanol is

A) 

B) 

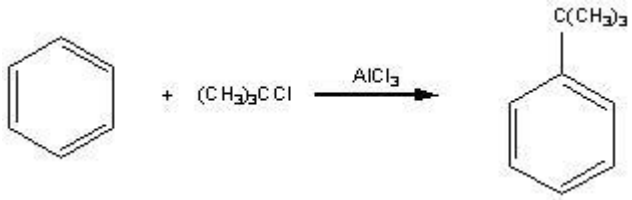
C) 

D) 

Q.106 Select an electrophile from the following examples which attacks benzene ring for nitration

A) N^+H_4
B) NO_2
C) HNO_3
D) NO^+_2

In the reaction



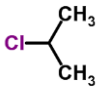
Q.107 Which of the following is the electrophile that accepts electrons from benzene

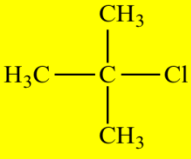
A) $AlCl_3$
B) $(CH_3)_3 – Cl$
C) $AlCl_4^-$
D) $(CH_3)_3^+$

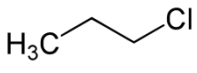
Q.108 What is the product formed when propene reacts with Br_2 in CCl_4 ?

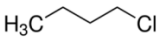
A) $CH_3 – CH_2 – CH_2Br$
B) $BrCH_2 – CH = CHBr$
C) $CH_2 – CH – CH_3$
Br Br
D) $CH_3 – CH – CH_3$
Br

Q.109 Which of the following doesn't give alkene when reacts with alcoholic NaOH

A) 

B) 

C) 

D) 

Q.110 Consider the reaction given below

$CH_3\text{-}CH_2\text{-}Cl + KCN(alc) \longrightarrow A + KCl \xrightarrow{H2O/HCl} B$

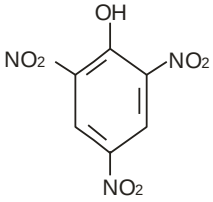
The lettered products A and B are

A) CH_3CH_2CN and CH_3CH_2COOH
B) CH_3CN and CH_3COOH
C) CH_3CH_2CN and CH_3COOH
D) CH_3CH_2CN and CH_3COH

Q.111 Consider the following reaction $C_3H_7OH + PCl_5 \rightarrow$?

A) C_2H_5Cl, $POCl_3$ and HCl
B) C_2H_5Cl only
C) C_3H_7Cl , $POCl_3$ and HCl
D) C_2H_5Cl and $POCl_3$

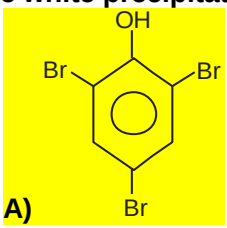
Q.112



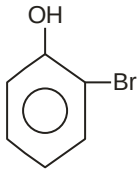
is named as

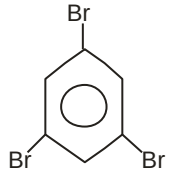
A) Nitro phenol
B) Benzoic acid
C) trinitrotoluene
D) Picric acid

Q.113 Aqueous phenol decolorizes bromine water to form a white precipitate. What is the structure of the white precipitate formed?

A) 

C)

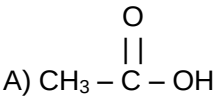
B) 

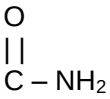
D) 

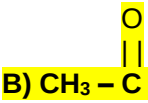
Q.114 The relative acid strength of carboxylic acid, water, ethanol and phenol has the following order of increasing acid strength

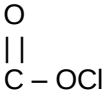
A) Carboxylic acid > Phenol > Ethanol > Water
B) Phenol > Carboxylic acid > Ethanol > Water
C) Carboxylic acid > Phenol > Water > Ethanol
D) Water > Ethanol > Phenol > Carboxylic acid

Q.115 Which of the following is the structure of an ester?

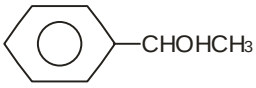
A) 

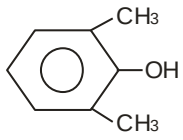
C) 

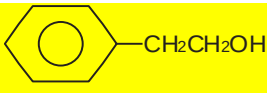
B) 

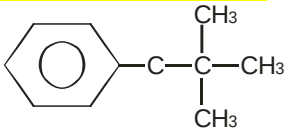
D) 

Q.116 What is the structure of alcohol which on oxidation with acidified $Na_2Cr_2O_7$ gives $C_6H_5CH_2COOH$

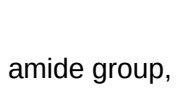
A) 

B) 

C) 

D) 

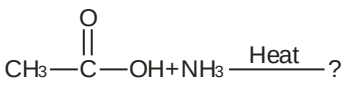
Q.117 Which group gives a yellow precipitate of triodomethane when warmed with alkaline aqueous iodine?

A) An amide group, 

C) A primary alcohol group as in propanol $CH_3CH_2CH_2OH$

B) Ethyl ketone group,

**D) Methyl ketone group, **



Q.118 The final products formed are

A) $CH_3 - \overset{\overset{O}{\|}}{C} - NH_2 + CO_2$

C) $CH_3 - \overset{\overset{O}{\|}}{C} - NH_2 + H_2O$

B) $CH_3 - \overset{\overset{O}{\|}}{C} - NH_2 + H_2$

D) $CH_3 - \overset{\overset{O}{\|}}{C} - NH_2 + HCl$

Q.119 Methyl cyanides, on boiling with mineral acids or alkalines, yield

A) Butanoic acid
B) Acetic acid
C) Formic acid
D) Propanoic acid

Q.120 The formation of ester from acetic acid in presence of acid and ethanol is a

A) Nucleophilic addition reaction
B) Electrophilic substitution reaction
C) Nucleophilic substitution reaction
D) Electrophilic addition reaction

Q.121 What is the name of amino acid, $NH_2 - \overset{\overset{H}{|}}{C}R - COOH$ where 'R' is $-CH_2-COOH$ group?

A) Glycine
B) Lysine
C) Aspartic acid
D) Alanine

Q.122 α - amino acids are compounds having carboxylic group as well as amino functional attached to same carbon when Two or more amino acids condensed to form protein by a peptide linkage which is present between two atoms

A) C and C
B) C and N
C) O and C
D) C and H

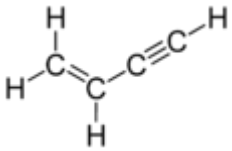
Q.123 If 18.0 grams of glucose is dissolved in 500cm^3 of solution, the molarity is

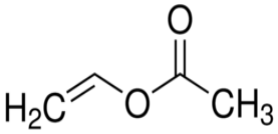
A) 2
B) 0.2
C) 0.1
D) 1.2

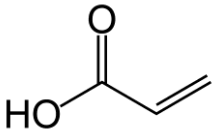
Q.124 60g urea dissolved in 18g water the mole fraction of urea is

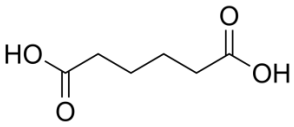
A) 1
B) 0.5
C) 0.25
D) 0.75

Q.125 Polyvinyl acetate (PVA) is colourless and non-toxic resin used as an adhesive and as a binder for making emulsion paints, what is the monomer of PVA

A) 

C) 

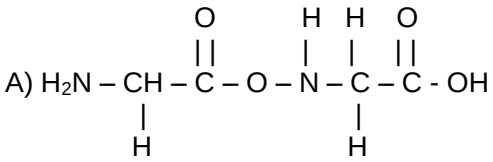
B) 

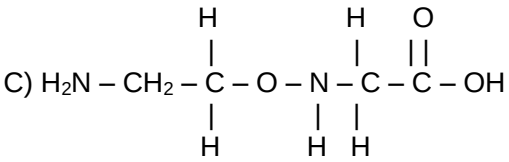
D) 

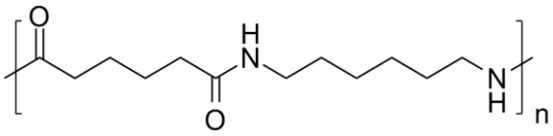
The reaction

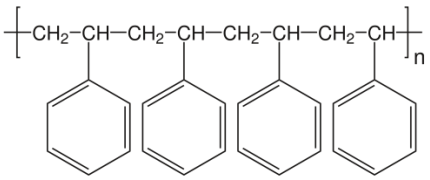
$$HO\text{-}\overset{\overset{O}{\|}}{C}\text{-}(CH_2)_4 - \overset{\overset{O}{\|}}{C} - OH + H - \underset{\underset{H}{|}}{N} - (CH_2)_6 - NH_2 \rightarrow$$

Q.126 Gives a product called dipeptide molecule represented by

A) 

C) 

B) 

D) 

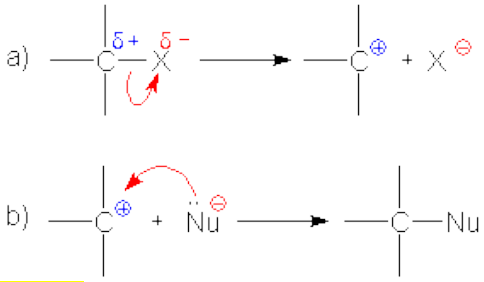
Q.127 Both ribose and deoxyribose are monosaccharides present in nucleic acids (DNA and RNA respectively) each contain ____ carbon atoms

A) Four
C) Five
B) Six
D) Seven

Q.128 Which of the following reacts with aldehydes and ketones in the presence of an acid catalyst

A) HCN
C) I_2
B) $NaHSO_3$
D) NH_2-NH_2

Q.129 The mechanism shown is



A) SN1
C) E1
B) SN2
D) E2

Q.130 Which of the following is O,P- director on benzene ring

A) OH
C) CHO
B) NO_2
D) COOH

Q.131 Residence time of NO in air is

A) 2 days
C) 4 days
B) 3 days
D) 5 days

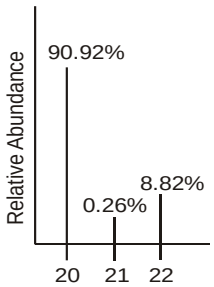
Q.132 The yellowish brown color in photochemical smog is due to the presence of

A) SO_2 (Sulphur doxide)
C) CO_2 (Carbon dioxide)
B) CO (Carbon monoxide)
D) NO_2 (Nitrogen dioxide)

Q.133 Anaerobic decomposition of organic matter i.e. glucose by bacteria in water sediments produce

A) Propane
C) Ethane
B) Methane
D) Butane

Q.134 A sample of Neon of found to exist as ^{20}Ne, ^{22}Ne. Mass spectrum of 'Ne' is as follows



What is the atomic mass of most abundant isotope?

A) 20.18
C) 20
B) 20.28
D) 20.22

Q.135 Hydrogen burns in chlorine to produce hydrogen chloride. The ratio of masses of reactants in chemical reaction $H_2+Cl_2 \rightarrow 2HCl$ is

A) 2:354.5
C) 1:35.5
B)1:71
D) 2:70

Q.136 The coordination number of Cl^+ in NaCl crystal is

A) 6
C) 4
B) 2
D) 8

Q.137 There are four gases H_2, He, N_2 and CO_2 at 0^0C. Which gas shows greater non-ideal behavior?

A) He
C) H_2
B) CO_2
D) N_2

Q.138 Correct order of energy in the given sub-shells is

A) 5s > 3d > 3p > 4s
C) 3p > 3d > 5s > 4s
B) 5s > 3d > 4s > 3p
D) 3p > 3d > 4s > 5s

Q.139 Number of electrons in the outermost shell of chloride ion (O^{-2}) is

A) 17
C) 1
B) 7
D) 8

Q.140 According to Valence Shell Electron Pair Repulsion Theory, the repulsive forces between the electron pairs of central atom of a molecule are in the order

A) Lone pair-Bond pair > LONE PAIR – Lone pair
B) Bond pair - Bond pair > Lone pair – Lone
C) Lone pair – Bond pair > Bond pair – Bond pair
D) Lone pair – Lone pair > Lone pair – Bond pair > Bond pair – Bond pair

Q.141 In crystal lattice of ice, each O-atom of water molecule is attached to

A) Four H – atoms
C) Two H – atoms
B) One H – atom
D) Three H – atoms

Q.142 Heat of sublimation of Na(s) is

A) -108 KJ/mole
C) +394 KJ/mole
B) +108 KJ/mole
D) -294 KJ/mole

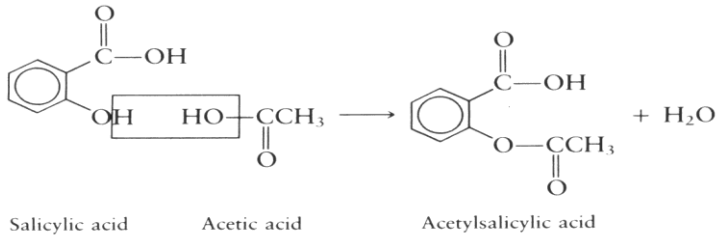
Q.143 Reactants have lower energy than products in

A) Endothermic reactions
C) Exothermic reactions
B) Photochemical reactions
D) Non – spontaneous reactions

Q.144 C_2H_5ONa is produced when ethanol reacts with Na metal the mixture of ethanol and Na can be used as

A) Oxidizing agent
C) Reducing agent
B) Acid
D) Base

Q.145 The reaction is an example of



Salicylic acid Acetic acid Acetylsalicylic acid

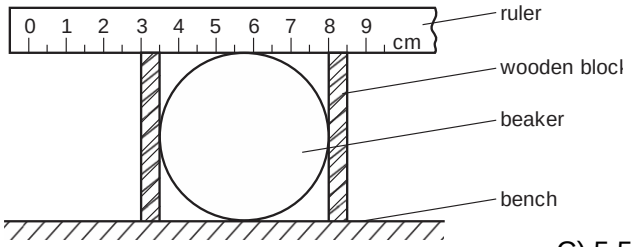
A) Esterification
C) Hoffmann synthesis
B) Wurtz synthesis
D) Cannizzarro's reaction

Q.146 When HCl gas is passed through a saturated solution of NaCl, NaCl is precipitated due to

A) Esterification
C) salting out effect
B) leach effect
D) common ion effect

Physics

Q.147 The diagram shows one method of measuring the diameter of a beaker.
What is the diameter of the beaker?

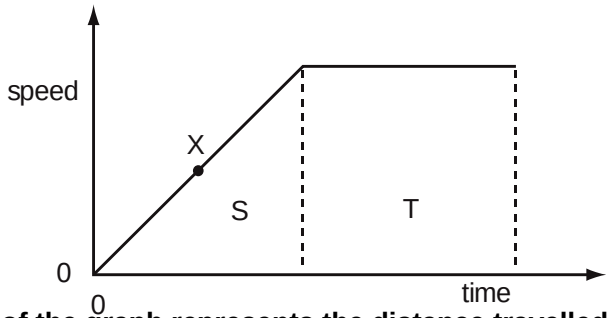


A) 4.5 cm
B) 5.0 cm
C) 5.5 cm
D) 8.0 cm

Q.148 Which row shows a base quantity with its correct SI unit?

	quantity	unit
A)	**current**	**A**
B)	mass	g
C)	temperature	°C
D)	weight	n

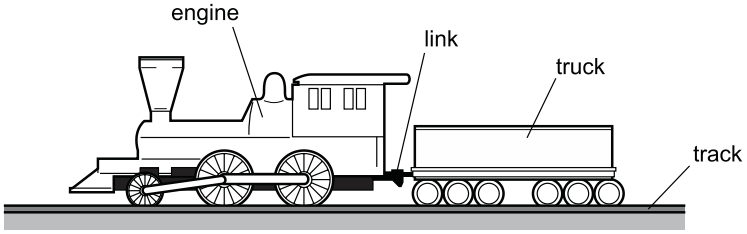
Q.149 The graph illustrates the motion of an object.



Which feature of the graph represents the distance travelled by the object while moving at a constant speed?

A) area S
B) area S + area T
C) area T
D) the gradients at point X

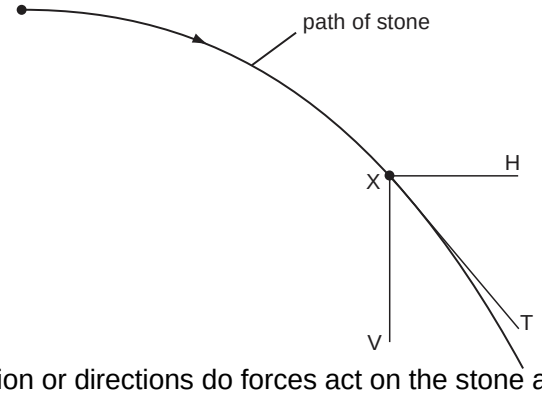
Q.150 An engine pulls a truck at constant speed on a level track.



The link between the truck and the engine breaks. The driving force on the engine remains constant.
What effect does this have on the truck and on the engine?

	Truck	**Engine**
A)	slows down	speed stays constant
B)	**slows down**	**speeds up**
C)	stops immediately	speed stays constant
D)	stops immediately	speeds up

Q.151 A stone is projected horizontally in a vacuum and moves along a path as shown. X is a point on this path. XV and XH are vertical and horizontal lines respectively through X.XT are the tangent to the path at X.



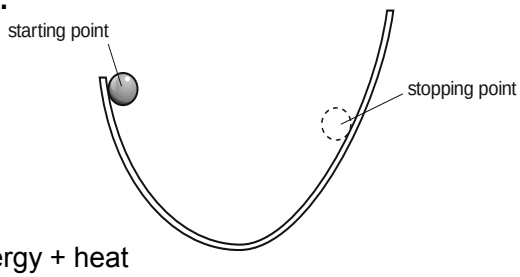
Along which direction or directions do forces act on the stone at X?

A) XV
C) XV and XH
B) XH
D) XT

Q.152 A ball is held at rest on one side of a curved track.

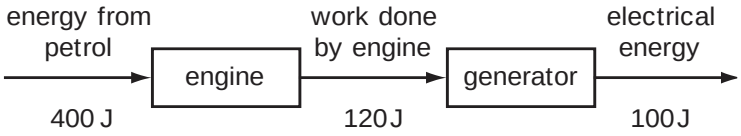
The ball is released. It rolls down one side of the track and part of the way up the other side. It then stops, before rolling back down again. The height of the stopping point is less than that of the starting point.

What is the sequence of energy changes between starting and stopping for the first time?



A) potential energy → kinetic energy → potential energy + heat
B) potential energy → kinetic energy → heat → potential energy
C) potential energy → heat → kinetic energy → potential energy
D) potential energy → kinetic energy + heat → potential energy + heat

Q.153 Energy from petrol is used to operate an engine. The engine drives a generator, which produces electrical energy.



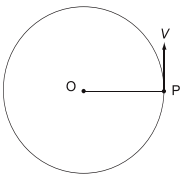
What is the overall efficiency of the process?

A) 25 %
C) 55 %
B) 30 %
D) 83 %

Q.154 An object of mass 5 kg is carried a distance of 4 m across a room at a constant height above the floor.What is the work done on the object?

A) 0
C) 50 J
B) 20 J
D) 200 J

Q.155 A particle P is moving in a horizontal circle about O. It moves at constant speed V. Which statement is true?



A) A force of constant size is acting in the direction of V
B) A force of constant size is acting towards O
C) The force on P varies in size as it moves around the circle
D) There are no forces acting on P

Q.156 When the body is moving with uniform velocity in a circle? Which thing is constant in circular motion?

A) Direction only
C) Magnitude only
B) Both direction & magnitude
D) Angular displacement

Q.157 A satellite that rotates around the earth in a low-altitude elliptical or circular pattern.

A) Geosynchronous satellite
C) Pro grade satellite
B) Non synchronous satellite
D) Retrograde satellite

Q.158 Formula for the Potential energy of the body Executing SHM at displacement x is

A) mgx
C) $K x^2$
B) K x
D) $\frac{m \omega^2 x^2}{2}$

Q.159 The displacement of a particle doing SHM (when amplitude is 4 cm) Kinetic energy = Potential energy

A) $2\sqrt{2}$ **cm**

C) $\frac{2}{\sqrt{2}}$ cm

B) 2 cm

D) $\sqrt{2}$ cm

Q.160 A Spring of spring constant 16 N m^{-1} is cut into two equal parts, the spring constant of each part will be

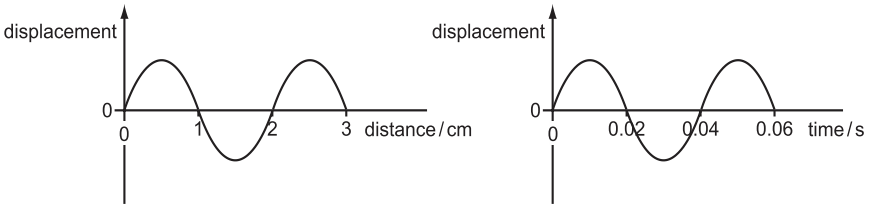
A) 4 Nm^{-1}

C) 16 Nm^{-1}

B) 8 Nm^{-1}

D) 32 Nm^{-1}

Q.161 The displacement-distance and displacement-time graphs are for a water wave in a ripple tank.



What is the speed of the water wave?

An organ pipe open at both ends and another organ pipe closed at one end will resonate with each other, if their lengths are in the ratio of

A) 1: 1

C) 2: 1

B) 1: 4

D) 1: 2

Q.162 Interference pattern of light and dark bands on screen is called

A) graphical pattern

C) light spectrum

B) line spectrum

D) fringes

Q.163 Effect of diffraction is greatest if waves pass through a gap with width equal to

A) frequency

C) amplitude

B) wavelength

D) wavefront

Q.164 A fixed mass of gas at constant temperature is compressed to reduce its volume. How do the molecules of gas now strike the walls of the container?

A) less often than before with a higher velocity

B) less often than before with the same velocity

C) more often than before with a higher velocity

D) more often than before with the same velocity

Q.165 A 2 kg mass of copper is heated for 40 s by a heater that produces 100 J / s. The specific heat capacity of copper is 400 J / (kg K). What is the rise in temperature?

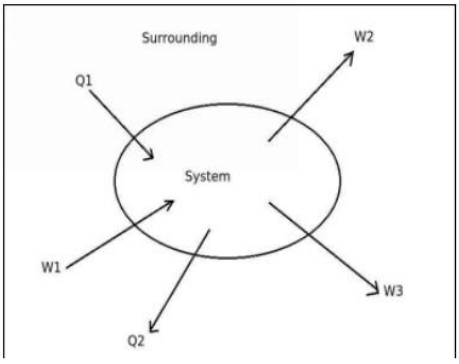
A) 5 K

C) 20 K

B) 10 K

D) 50 K

Q.166 Consider the below diagram of heat transfer and work transfer for a system. What will be the first law equation for the below system?



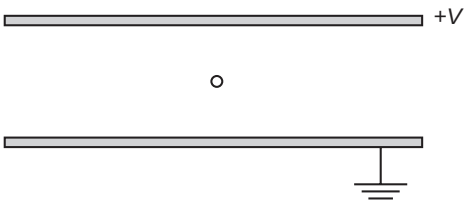
A) $(Q_1 - Q_2) = \Delta E - (W_2 + W_3 - W_1)$

C) $(Q_1 - Q_2) = \Delta E + (W_2 + W_3 - W_1)$

B) $(Q_1 + Q_2) = \Delta E + (W_2 - W_3 + W_1)$

D) $(Q_1 + Q_2) = \Delta E + (W_2 + W_3 + W_1)$

Q.167 The diagram shows two parallel horizontal metal plates held at a potential difference V.



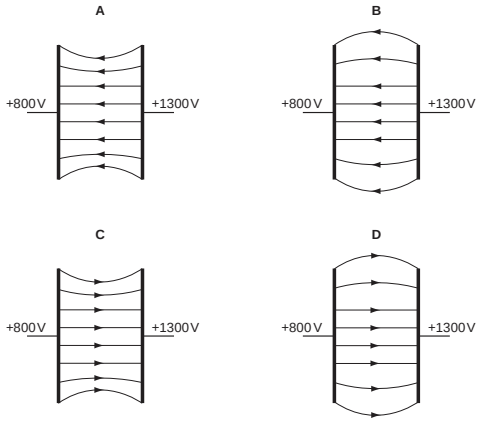
A small charged liquid drop, midway between the plates, is held in equilibrium by the combination of its weight and the electric force acting on it.
The acceleration of free fall is g and the electric field strength is *E*.
What is the ratio of the charge to mass of the drop, and the polarity of the charge on the drop?

	$\frac{\text{charge}}{\text{mass}}$	Polarity
A)	$\frac{g}{E}$	Positive
B)	$\frac{g}{E}$	**Negative**
C)	$\frac{E}{g}$	Positive
D)	$\frac{E}{g}$	Negative

Q.168 The electric field at a certain distance from an isolated alpha particle is 3.0 ×10^{7} NC$^{–1}$.
What is the force on an electron when at that distance from the alpha particle?

A) 4.8 ×10$^{–12}$N
C) 9.6 ×10$^{–12}$N
B) 3.0 ×10^{7}N
D) 6.0 ×10^{7}N

Q.169 Two parallel metal plates are at potentials of +800 V and +1300 V.
Which diagram best shows the electric field between the metal plates? B)



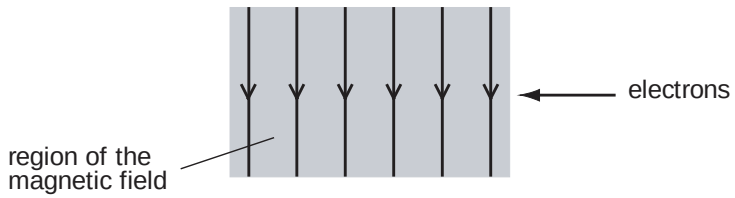
Q.170 When there is no current in a wire, which statement about the conduction electrons in that wire is correct?
A) Electrons in the wire are moving totally randomly within the wire.
B) Equal numbers of electrons move at the same speed, but in opposite directions, along the wire.
C) No current is flowing therefore the electrons in the wire are stationary.
D) No current is flowing therefore the electrons in the wire are vibrating around a fixed point.

Q.171 A high-resistance voltmeter connected across a battery reads 6.0 V.
When the battery is connected in series with a lamp of resistance of 10Ω, the voltmeter reading falls to 5.6 V. Which statement explains this observation?
A) The electromotive force (e.m.f.) of the battery decreases because more work is done across its internal resistance.
B) The e.m.f. of the battery decreases because work is done across the lamp.
C) The potential difference (p.d.) across the battery decreases because more work is done across its internal resistance.
D) The p.d. across the battery decreases because work is done across the lamp.

Q.172 Which quantity can be measured in electron volts (eV)?

A) electric charge
B) electric potential
C) energy
D) power

Q.173 The diagram shows a beam of electrons entering a magnetic field. The direction of the magnetic field is downwards, towards the bottom of the page.



In which direction does the deflection of the electrons occur?

A) into the page
B) out of the page
C) towards the bottom of the page
D) towards the top of the page

Q.174 What does not alter the size of the turning effect on the coil of an electric motor?

A) the direction of the current in the coil
B) the number of turns in the coil
C) the size of the current in the coil
D) the strength of the magnetic field

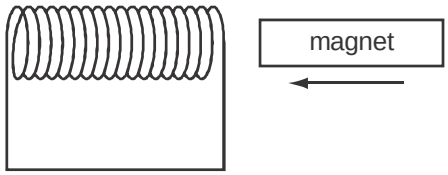
Q.175 Which properties make materials suitable for use as a core in an electromagnet?

A)difficult to magnetise and easy to demagnetise
B)difficult to magnetise and retains magnetic strength
C)easy to magnetise and retains magnetic strength
D)easy to magnetise and easy to demagnetize

Q.176 Electrical energy is transmitted at high alternating voltages. What is not a valid reason for doing this?

A) At high voltage, a.c. is safer than d.c.
B) For a given power, there is a lower current with a higher voltage.
C) There is a smaller power loss at higher voltage and lower current.
D) The transmission lines can be thinner with a lower current.

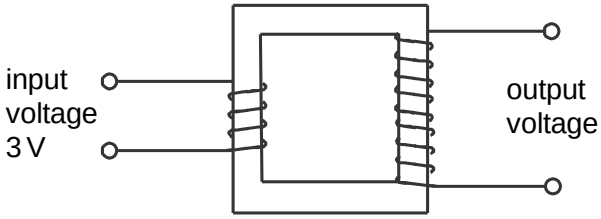
Q.177 A magnet is pushed horizontally towards a coil of insulated wire, inducing an e.m.f. in the coil.



In which direction does the induced e.m.f. make the coil move?

A) away from the magnet
B) downwards
C) towards the magnet
D) upwards

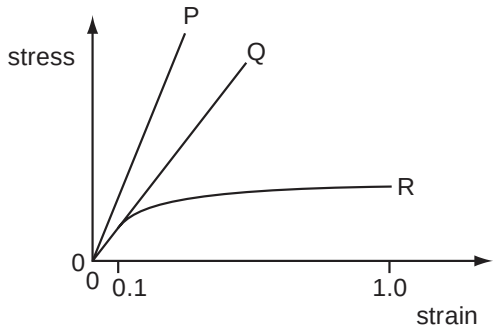
Q.178 A step-up transformer with 100 % efficiency has an input voltage of 3 V and an input current of 2 A.



Under these conditions, what output voltage and output current could be obtained?

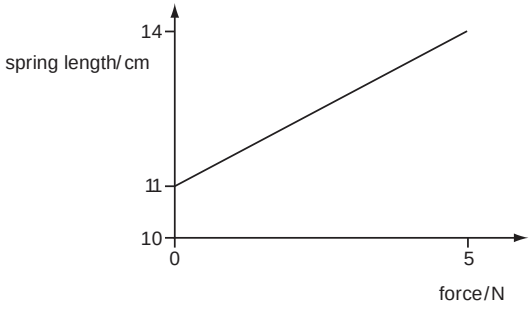
	Output voltage / V	Output current /A
A)	1	6
B)	2	3
C)	4	1
D)	**6**	**1**

Q.179 The graph shows the relationship between stress and strain for three wires of the same linear dimensions but made from different materials.



Which statements are correct?
1: The extension of P is approximately twice that of Q for the same stress.
2: The ratio of the Young modulus for P to that of Q is approximately two.
3: For strain less than 0.1, R obeys Hooke's law.
A) 1, 2 and 3
C) 2 and 3 only
B) 1 and 3 only
D) 2 only

Q.180 The graph shows the effect of applying a force of up to 5 N to a spring.



What is the total increase in length produced by a 7 N force, assuming the spring obeys Hooke's law?
A) 4.2 cm
C) 15.2 cm
B) 5.6 cm
D) 19.6 cm

Q.181 Which one has the greatest energy gap?
A) Semi conductor
C) Metals
B) Conductor
D) Non metals

Q.182 The open-loop voltage gain (A_{ol}) of an op-amp is the
A) -external voltage gain the device is capable of
B) -internal voltage gain the device is capable of
C) -most controlled parameter
D) -same as A_{cl}

Q.183 A noninverting closed-loop op-amp circuit generally has a gain factor:
A) -less than one
C) -of zero
B) -greater than one
D) -equal to one

Q.184 In a photoelectric effect experiment, the frequency of the light is increased while keeping the intensity of the light constant. What effect does this have?
A) fewer electrons will be ejected
B) more electrons will be ejected
C) the same number of electrons will be ejected
D) any of these is possible

Q.185 Choose the correct statement:
A) The maximum frequency of continuous X-rays does not depend upon electrons.
B) The frequencies of characteristic X-rays depend upon the energy of the incident electrons
C) All the X-rays emitted have one frequency determined by the energy of the incident electrons
D) The maximum frequency of continuous X-rays depend upon the energy of incident electrons but the energy of characteristic X-rays does not depend upon it

Q.186 If an electron drops from the 2.9 eV level, it
A) A gains 2.9 eV of kinetic energy B.
C) emits a 2.9 eV photon
B) gains 2.9 eV of potential energy
D) emits a 2.9 eV electron

Q.187 The de-broglic wavelength of 1Mev proton is;

A) 1.29×10^{-14}m
B) 1.29×10^{-13}m
C)1.29×10^{-12}m
D) 1.29×10^{-11}m

Q.188 A radioactive isotope has a half-life of 6000 years.How much time passes before the rate of emission from a sample of this isotope falls to 1/16 of itsoriginal value?

A) 6000 years
B)18 000 years
C) 24000 years
D) 96 000 years

Q.189 Which row is correct for fission and for fusion?

	fission of a nucleus	Fusion
A)	produces larger nuclei	is the energy source of a star
B)	produces larger nuclei	is used to release energy in a power station
C)	**produces smaller nuclei**	**is the energy source of a star**
D)	produces smaller nuclei	is used to release energy in a power station

Q.190 Total number of quarks and their anti quarks is:

A) 6
B) 12
C) 18
D) 24

English

Choose the correct word / words to complete each sentence.

Q.191 She might be forgiven for _____ beneath the pressure.

A) undertaking
B) extricating
C) buckling
D) resounding

Q.192 His abstruse theories have been _____ by recent research.

A) pronounced
B) rearmed
C) dammed
D) debunked

Q.193 On the eve of Basant, the sky used to get _____ by the hues of reddish kites soaring high.

A) roil
B) rotatory
C) robust
D) ruddy

Q.194 He is always vegetating in front of TV, doing nothing, sitting _____.

A) tipping point
B) tertiary
C) torpid
D) titan

the following sentences, some segments of each sentence are underlined. Your task is to identify that underlined segment of the sentence, which contains the mistake that needs to be corrected. Fill the circle corresponding to that letter under the segment in the MCQ Response Form.

Q.195 They were still lost in their newly acquire happiness when suddenly, once again, they heard a knock.
A **B** C D

Q.196 He came to the hurdles that he remember, over which once he had so easy a victory.
A **B** C D

Q.197 Thrifty housewives preserved their homegrown vegetables and fruits in canning, **A**
pickling or drying them for use during the cold weather.
B C D

Q.198 The workers were raising much hue and cry when their demands were turned away.
A B C **D**

Q.199 The prime minister fired a broadside at the opposition leaders. A few of his remarks A
were not up at the mark.
B C **D**

Q.200 Pasteur was devoured with fears and anxiety about the results.
A **B** C D

In each of the following questions, four alternative sentences are given Choose the CORRECT one and fill the circle corresponding to that letter in the MCQ Response Form.

Q.201

A) His faculties were all unimpairment, and he had no personal worries of any kind.
B) His faculties were all unimparing, and he had no personal worries of any kind.
C) His faculties were all unimpaired, and he had no personal worry of any kind.
D) His faculties were all unimpaired, and he had no personal worries of any kind.

Q.202

A) The lovely sentiments we go through repeating!
B) The lovely sentiments we go about repeating!
C) The lovely sentiments we go in repeating!
D) The lovely sentiments we go for repeating!

Q.203

A) Inside a carton was a push-button unit fastened with a small wooden box.
B) Inside a carton was a push-button unit fastened by a small wooden box.
C) Inside a carton was a push-button unit fastened to a small wooden box.
D) Inside a carton was a push-button unit fastened along a small wooden box.

Q.204

A) The cheery trees stand over the woodland ride.
B) The cheery trees stand about the woodland ride.
C) The cheery trees stand beside the woodland ride.
D) The cheery trees stand on the woodland ride.

Q.205

A) It was cold and foggy, and he dared not to going out.
B) It was cold and foggy, and he dared not for going out.
C) It was cold and foggy, and he dared not go out.
D) It was cold and foggy, and he dared not gone out.

Q.206

A) They tried to pacify him for kindness and affection.
B) They tried to pacify him in kindness and affection.
C) They tried to pacify him by kindness and affection.
D) They tried to pacify him with kindness and affection.

Q.207

A) Chips looked at the window, graying into twilight; it was time to light with.
B) Chips looked at the window, graying into twilight; it was time to light up.
C) Chips looked at the window, graying for twilight; it was time to light with.
D) Chips looked at the window, graying into twilight; it was time to light up.

Q.208

A) Whenever he rose to speak at a meeting, or even when he talked across a table, people prepared their minds and faces for the joke.
B) Whenever he rose to speak at a meeting, or even when he talked over a table, people prepared their minds and faces for the joke.
C) Whenever he rose to speak at a meeting, or even when he talked across a table, people prepared their minds and faces on the joke.
D) Whenever he rose to speak at a meeting, or even when he talked on a table, people prepared their minds and faces over the joke.

Q.209

A) On the walls, on shelves, are many odds and ends, some apparently washed up by the sea.
B) Over the walls, on shelves, are many odds and ends, some apparently washed off by the sea.
C) On the walls, on shelves, are many odds and ends, some apparently washed away by the sea.
D) above the walls, on shelves, are many odds and ends, some apparently washed up by the sea.

Q.210

A) Mustafa Kamal declared the old script to be abolished and replaced with the Roman script.
B) Mustafa Kamal declared the old script to be abolish and replaced with the Roman script.
C) Mustafa Kamal declared the old script to be abolished and replaced for the Roman script.
D) Mustafa Kamal declared the old script to be abolished and replaced by the Roman script.

In each of the following questions, four alternative meanings of a word are given. You have to select the NEAREST CORRECT MEANING of the given word and fill the appropriate Circle on the MCQ Response Form.

Q.211 PROWESS
A) hindrance
B) skill
C) reservation
D) bad name

Q.212 UNCANNY
A) exact
B) opposite
C) good
D) weird

Q.213 VIRULENT
A) progressive
B) venomous
C) healthy
D) positive

Q.214 CONCERTED
A) strange
B) furious
C) curious
D) focused

Q.215 ARCANE
A) amorphous
B) furious
C) arid
D) clear

Q.216 CHIVALRY
A) coward
B) non-cooperative
C) imitating
D) gallantry

Q.217 IMPROVISE
A) colophon
B) concoct
C) divert
D) respit

Q.218 PARADOX
A) anomaly
B) prototype
C) steward
D) fashion

Q.219 MANIFESTATION
A) mode
B) token
C) quirk
D) bulwark

Q.220 MUSE
A) immaculate
B) cud over
C) sigh over
D) vagary